SEQUENCE LISTING

<110> PAEK, Nam-Chon
KOH, Hee-Jong

<120> A NOVEL STAY-GENE AND METHOD FOR PREPARING STAY-GREEN TRANSGENIC PLANTS

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<141> 2006-07-26

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<151> 2005-01-12

<150> 10-2004-0012026
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cagggatggt ccaacaaatt gtacagagat gaagtggtgg cagagtggaa gaaagtaaag 360

ggaaagatgt ctctccatgt tcactgccat ataagtggag gccattttct cctagattta 420

tgttgtagac ttagatattt catcttccgc aaagaacttc ctgtggtatt gaaggccttc 480

tttcatggag atgggaattt gtttagcagc tatcctgaat tgcaggaggc tttagtttgg 540

gtttactttc attccaacat tccagaattc aacaaggtag agtgctgggg tccactcaag 600

catgccgcag caccttatac tgctgcatct ggcggggccc ctgagaacaa ggagcaagca 660

accgactgga acttgcctga gccatgccaa gagaactgtc agtgttgctt tccaccaatg 720

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cagacctttc aacaagctca acaaccctaa 810

<210> 17
<211> 813
<212> DNA
<213> Populus tremula x Populus tremuloides

<400> 17
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caacacagct ccctcttttc tccaagtaca aagctcaaga ggaagaacca atctatcagc 120

cctgtggcaa ggttatttgg gccatctatt tttgaggcat caaagctgaa ggtgctgttc 180

ttaggggttg atgagaagga gcatccaggg aatctgccaa ggacttatac tctaacacac 240

agtgatatga cagctaagct tactttagcc atctcacaga ccataaacaa ttctcagttg 300

cagggatggt ccaacaaatt gtaccgagat gaagtggtgg cagagtggaa gaaagtaaag 360

ggaaagatgt ctcttcatgt tcattgccat ataagtggag gccattttct tttagattgg 420

tgctgcagac tcagatattt catcttccgc agagaactcc ctgtggtatt gaaggccttt 480

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gtttactttc attcaaacat tccggaattc agcaaggtcg agtgctgggg tccactcaag 600

gatgctgctg cgccttctac ttctgaaact ggtgggtcca atgagaccga ggagctagca 660

aaccaatcaa gcaactggga cttgcccgag ccatgccaag aggagaattg tagctgttgc 720

tttccaccaa tgagcttgat cccatggtct aaaatggttc cgttggagga caaaaataat 780

ccaagcaccc cacagaacct tcaacagccc taa 813

<210> 18
<211> 861
<212> DNA
<213> Mesembryanthemum crystallinum

<400> 18
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gatcaatcct ctgtttattt taaaagatca tgcagaggac ttcccaagct caacaaggcc 120

aaatcttttt cacctgtgat gagattgttt gggccagcaa tatttgaagc atcaaagttg 180

aaggtgttgt tcttgggagt ggataaagag aagcacccag ggaagttgcc tagaacttat 240

actcttactc atagtgatat cacttccaag ctcactttgg ccatctctca aactattaac 300

aattcccagt tacaagggtg gtacaaccaa ctacagagag atgaagtggt ggcagaatgg 360

aagaaagtga aagggaagat gtcactccat gttcattgtc acataagtgg tggccatatc 420

ctcttagact tatttgctaa gcttagattc tacatctttt gcaaggaact ccctgtggta 480

ttgaaggcat ttgtgcatgg ggatgagaat ttgttcaaca actacccaga actacaagag 540

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gagacttgca aggaaccctg tacctgttgc tttcctccca ctagtgtcat cccttggtct 780

cattcagcat tgtcacaggg tgatgatctt catctctctg gtgggaccca ccaaggcttg 840

gagcagcagc agcaaacttg a 861

<210> 19
<211> 807
<212> DNA
<213> Arabidopsis thaliana

<400> 19
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aagaaccaat cgattgttcc cgttgcaagg ttgtttggac cggcgatttt cgaatcatcc 180

aaattgaaag tactcttctt aggggttgat gagaagaagc atccttcaac gctccctagg 240

acttacacac tcactcacag tgacattaca gctaaactaa ccttagctat ttctcaatcc 300

ataaacaact ctcagttgca aggatgggca aataggctat accgggatga agttgtggca 360

gaatggaaga aagtgaaagg gaaaatgtcg cttcacgttc attgtcacat aagcggtggc 420

catttccttt tagatctctt tgcaaagttt cgatatttca tcttttgcaa agaactacct 480

gtggtgttga aggcttttgt gcatggagat gggaacttgt tgaacaacta tcctgagcta 540

caagaagctc ttgtttgggt ctatttccat tctaatgtca atgagttcaa caaagtcgag 600

tgttggggtc cgctttggga agctgtttcg cctgatggtc acaagactga gactcttccc 660

gaggctcggt gtgcggacga gtgtagttgt tgttttccaa ccgttagctc gattccatgg 720

tctcatagtc ttagtaatga aggtgtaaat ggttactctg ggactcagac tgagggaatt 780

gctactccaa atccggagaa actctag 807

<210> 20
<211> 816
<212> DNA
<213> Arabidopsis thaliana

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attgttcctg ttgcaagatt gtttggaccg gcgatttttg aagcctccaa attgaaagtg 180

ttattcttag gagttgatga gaagaagcat ccagcaaaac ttccaagaac ttacactctt 240

actcacagtg acataaccgc taaattaact ttagctatat ctcaatccat taataactct 300

cagttgcaag gatgggcaaa taaattgttc cgggacgaag tagtgggcga gtggaagaaa 360

gtgaaaggta aaatgtcgct tcatgttcat tgccacatta gcggaggcca cttcttcttg 420

aatctcatcg cgaagcttcg gtactacatc ttttgcaaag aattacctgt ggtactggaa 480

gcttttgccc atggagatga gtatttgtta aataatcacc ccgagctaca agaatctcct 540

gtttgggttt atttccattc caacatcccg gagtacaaca aggtcgaatg ttggggaccg 600

ctttgggagg ccatgtcgca gcaccagcac gacggaagga cccacaagaa gagtgaaact 660

ctaccggagc taccttgtcc tgatgagtgc aagtgttgct ttccgacggt tagcacgatt 720

ccgtggtctc atcgtcatta tcaacatacc gcagcggatg agaatgttgc ggatggcctg 780

ttggaaatac ctaaccctgg gaaatcaaag ggatag 816

<210> 21
<211> 662
<212> DNA
<213> Lycopersicon esculentum

<400> 21
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gcaaggttat ttggaccagc tatatttgaa gcttcaaaat tgaaggtact ttttttggga 180

gttgatgaag aaaagcatcc aggaaagttg ccaagaacat atacactgac tcatagtgat 240

attacttcta aacttacttt ggctatctcc caaaccatca ataattctca gttgcaaggt 300

tggtataaca gacttcaaag agatgaagtt gttgcagagt ggaagaaagt aaaagggaag 360

atgtcacttc atgtccattg ccacattagt ggaggccatt ttatgttaga cttatttgct 420

agactcagaa actacatctt ctgcaaagaa ctccctgtgg ttctcaaggc ttttgttcat 480

ggagatgaga atttactaag gaattatcca gagttacaag aagctttagt ttgggtatat 540

tttcattcaa acattcaaga attcaacaaa gtagaatgtt ggggtccact cagagatgca 600

acttcccccc catcttcttc tggtggggta ggtggggtga agagtacaag ttttacaagc 660

ca 662

<210> 22
<211> 334
<212> DNA
<213> Beta vulgaris

<400> 22
cccggaatta caagaagctt cagtatgggt atacttccat tcaagcattc ctgaatttaa 60

caaagtagag tgctggggcc cattgaccga cgccgtggat ccgccgtcga aaaataagaa 120

gaggatgatg atgataaatg atgagcagga taaagaagaa gaagaagaag caagtagctc 180

aaaatgggag atgttagttc cttgcacgaa accatgtaga tgttgctttc cacctacaag 240

tttgattcct tggactcctt cactatcaca agaacagcaa caagagcaac aacttcctgg 300

agacgtttcg atcccgccac ctgggactcg ctag 334

<210> 23
<211> 564
<212> DNA
<213> Zosterops japonica

<400> 23
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atccacgccg cgcagctgca ggggtggtac aaccgcctgc agcgggacga ggtggtggcc 120

gagtggagga aggtgcgcgg gaacatgtcg ctgcacgtcc actgccacat ctccggcgga 180

cacttcctcc gcgacctcat cgcgccgctc cgctactaca tcttccgcaa ggagctcccc 240

gtggttctca aggcgttcgt gcacggcgac ggcagcctgt tcagcagcca cccggagttg 300

gaggaggcca cggtgtgggt ctacttccac tccaacctgc cccgcttcaa ccgcgtcgag 360

tgctggggtc ctctctgcga cgccgccgcg cccgtcgagg aggaggggca gcagaatgac 420

gatcggttgc ccgcgggcga gtggccgcgg cggtgccccc agcagtgcga gtgctgcttc 480

ccgccgcaca gtctcatccc ctggcccaac gagcacgaca tggctcccac cgacgccccc 540

gccgctggcc agacgcagca gtga 564

<210> 24
<211> 284
<212> DNA
<213> Lotus corniculatus

<400> 24
actacccaga attgcaggat gcattggttt gggtatactt tcactcaaag attccagagt 60

tcaacaaggt acagtgttgg ggaccactga aggaggcggc tgcaccgtca ggtgggtccc 120

cggagaaaga aggtgaaggg gtgaagatgc cggatccgtg tccagaagaa tgtgagtgtt 180

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attatgaagc ttttgatggg gttgggaccc gaccaaactt gtag 284

<210> 25
<211> 326
<212> DNA
<213> Lotus corniculatus

<400> 25
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cacttaagga tgcttgtgca acatcaattg ggtcctactc ctatgacaag ggtatgcctc 240

aaactcagcc atgccaacaa aactgcgagt gttgctttac accgatgagc tcaagtgatt 300

ggattggaac ccaacaaaaa ttgtga 326

<210> 26
<211> 415
<212> DNA
<213> Saccharum officinarum

<400> 26
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ggtgctcaag gcgttcgtgc acggcgacgg cgacctgttc agccggcacc cggagctgga 120

ggatgccacg gtgtgggtct acttccactc caacctgacc cgcttcaacc gcgtcgagtg 180

ctggggtccg ctccgcgacg ccgccgcgcc gccggccgag gaagactcca ccgcgccggc 240

cgcctccaac tccaaggagg ggcagatgcc gcccgtgggc gagtggccgt accggtgtcc 300

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catggctgcc gccgccgccg atgccaccgc cgctggccag gcccaacagc agtag 415

<210> 27
<211> 481
<212> DNA
<213> Picea abies

<400> 27
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tcattggctt ctggacgcca tcgcgagact tagattttac atcttccgca aggaactgcc 180

ggtggtgctg gaggcgttca ggcatggaga tcgggctctg cttgacaagc acccagagct 240

agagaccgct ctggtttggg tgtatttcca ctccaatgtc agagagttca aacgcgtgga 300

gtgttggggt tctttggctg aggcatgcaa gggtgcccct agcaatttgg agaaggaatt 360

ggacgaggag tttaatggtg aaaaattgga gatgcctagt cattgctcag aaccatgcaa 420

ttgttgcttt cctccattta gcgtccttct acgaccagaa gatgctgaac aatttattta 480

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<210> 28
<211> 632
<212> DNA
<213> Brassica napus

<400> 28
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aaacagaaca ctaactcact ctttcttaca aataaaagat ccttgatgca gaacagatct 120

actgttcctg ttcctgttgc aagattgtta gaaccggcga tttttgaagc ctccaaattg 180

aaagtatcgt tcttaggagt tgatgagaag aagcatccat caaagctccc aagaacttac 240

actcttactc acagtgacat aacagctaag ttaactttag ctatctccca atctatcaat 300

aattctcagt tgcagggatg ggctaataga ttatttcggg acgaagtagt ggccgagtgg 360

aagaaagtga agggtaaaat gtcccttcac gttcattgcc acattagcgg aggccacttc 420

cttttggatc tcatagcgaa gcttcggtac tacatatttt gcaaggaatt accggtggta 480

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ggccgctttg ggaggccacg cagcacaaac ac 632

<210> 29
<211> 291
<212> DNA
<213> Brassica napus

<400> 29
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aaacggggta atagtacgaa ctcacttctt gtctccaata caagatccaa gaggaagaac 120

caatccgttg ttcctatggc aagattgttt ggaccggcga ttttcgaatc atccaagttg 180

aaagtattgt ttctaggtgt tgatgacaag aagcatccac caacgcttcc aaggacttac 240

actctcactc acagtgacat tacagctaag ctaactttag ctatttctca c 291

<210> 30
<211> 274
<212> PRT
<213> Oryza sativa

<400> 30

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Met Ala Ala Ala Thr Ser Thr Met Ser Leu Leu Pro Pro Ile Thr Gln
1               5                   10                  15

Gln Gln Arg Trp His Ala Ala Asp Ser Leu Val Val Leu Ala Ser Arg
            20                  25                  30

Cys His Asn Ser Arg Arg Arg Arg Arg Cys Arg Tyr Val Val Pro Arg
        35                  40                  45

Ala Arg Leu Phe Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val
    50                  55                  60

Leu Phe Leu Gly Val Asp Glu Glu Lys His Gln His Pro Gly Lys Leu
65                  70                  75                  80

Pro Arg Thr Tyr Thr Leu Thr His Ser Asp Val Thr Ala Arg Leu Thr
                85                  90                  95

Leu Ala Val Ser His Thr Ile Asn Arg Ala Gln Leu Gln Gly Trp Tyr
            100                 105                 110

Asn Lys Leu Gln Arg Asp Glu Val Val Ala Glu Trp Lys Lys Val Gln
        115                 120                 125

Gly His Met Ser Leu His Val His Cys His Ile Ser Gly Gly His Val
    130                 135                 140

Leu Leu Asp Leu Ile Ala Gly Leu Arg Tyr Tyr Ile Phe Arg Lys Glu
145                 150                 155                 160

Leu Pro Val Val Leu Lys Ala Phe Val His Gly Asp Gly Asn Leu Phe
                165                 170                 175

Ser Arg His Pro Glu Leu Glu Glu Ala Thr Val Trp Val Tyr Phe His
            180                 185                 190

Ser Asn Leu Pro Arg Phe Asn Arg Val Glu Cys Trp Gly Pro Leu Arg
        195                 200                 205

Asp Ala Gly Ala Pro Pro Glu Glu Asp Asp Ala Val Ala Ala Ala Ala
    210                 215                 220

Ala Glu Glu Ala Ala Ala Glu Gln Met Pro Ala Ala Gly Glu Trp Pro
225                 230                 235                 240

Arg Arg Cys Pro Gly Gln Cys Asp Cys Cys Phe Pro Pro Tyr Ser Leu
                245                 250                 255
```

```
Ile Pro Trp Pro His Gln His Asp Val Ala Ala Ala Asp Gly Gln Pro
            260                 265                 270

Gln Gln
```

<210> 31
<211> 281
<212> PRT
<213> Hordeum vulgare

<400> 31

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Met Ala Ile Ala Ala Ala Ala Gly Ala Ser Thr Met Ser Leu Leu Pro
1               5                   10                  15

Ile Ser His Leu Lys Gln Leu Gln Leu Gln Arg Arg Ala Arg Pro Gly
            20                  25                  30

Arg Val Leu Val Leu Gly Arg Arg Arg Arg His Val Val Pro Arg Ala
        35                  40                  45

Arg Leu Phe Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu
    50                  55                  60

Phe Val Gly Val Asp Glu Glu Lys His Pro Gly Lys Leu Pro Arg Thr
65                  70                  75                  80

Tyr Thr Leu Thr His Ser Asp Val Thr Ala Arg Leu Thr Leu Ala Val
                85                  90                  95

Ser His Thr Ile His Ala Ala Gln Leu Gln Gly Trp Tyr Asn Arg Leu
            100                 105                 110

Gln Arg Asp Glu Val Val Ala Glu Trp Lys Lys Val Gln Gly Ala Met
        115                 120                 125

Ser Leu His Val His Cys His Ile Ser Gly Gly His Phe Leu Leu Asp
    130                 135                 140

Leu Ile Ala Pro Leu Arg Tyr Tyr Ile Phe Arg Lys Glu Leu Ser Val
145                 150                 155                 160

Val Leu Lys Ala Phe Val His Gly Asp Gly Ser Leu Phe Ser Gln His
                165                 170                 175

Pro Glu Leu Glu Glu Ala Thr Val Trp Val Tyr Phe His Ser Asn Asn
            180                 185                 190
```

```
Pro Asn Phe Asn Arg Val Glu Cys Trp Gly Pro Leu Ser Asp Ala Ala
        195                 200                 205

Ala Pro Tyr Asp Asp Glu Ala Ala Val Asp Ser Pro Ala Ala Asp Ala
    210                 215                 220

Ala Met Ala Ala Thr Ala Val Asn Thr Ala Ala Asp Glu Gln Ala Thr
225                 230                 235                 240

Arg Ala Gly Gln Trp Pro Arg Arg Cys Pro Gly Gln Cys Asp Cys Cys
                245                 250                 255

Phe Pro Pro Glu Cys Leu Ile Pro Trp Pro His Glu His Glu Met Ala
            260                 265                 270

Ala Asp Ala Gly Gln Ala Pro Pro Gln
        275                 280
```

<210> 32
<211> 266
<212> PRT
<213> Triticum aestivum

<400> 32

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Met Ala Thr Ala Ser Thr Met Ser Leu Leu Pro Ile Ser His Leu Lys
1               5                   10                  15

Gln Met Gln Gln Gln Arg Arg Thr Arg Leu Ala Gly Ala Leu Pro Gly
            20                  25                  30

Lys Val Leu Val Leu Gly Arg Arg Arg Arg His Val Val Pro Arg Ala
        35                  40                  45

Arg Leu Phe Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu
    50                  55                  60

Phe Val Gly Val Asp Glu Glu Lys His Pro Gly Lys Leu Pro Arg Thr
65                  70                  75                  80

Tyr Thr Leu Thr His Ser Asp Val Thr Ala Arg Leu Thr Leu Ala Val
                85                  90                  95

Ser His Thr Ile His Ala Ala Gln Leu Gln Gly Trp Tyr Asn Arg Leu
            100                 105                 110

Gln Arg Asp Glu Val Val Ala Glu Trp Lys Lys Val Gln Gly Ala Met
        115                 120                 125
```

```
Ser Leu His Val His Cys His Ile Ser Gly Gly His Phe Leu Leu Asp
    130                 135                 140

Leu Ile Ala Pro Leu Arg Tyr Tyr Ile Phe Arg Lys Glu Leu Pro Val
145                 150                 155                 160

Val Leu Lys Ala Phe Val His Gly Asp Gly Ser Leu Phe Ser Gln His
                165                 170                 175

Pro Glu Leu Glu Glu Ala Thr Val Trp Val Tyr Phe His Ser Asn Asn
            180                 185                 190

Pro Asn Phe Asn Arg Val Glu Cys Trp Gly Pro Leu Arg Glu Ala Ala
        195                 200                 205

Ala Pro Tyr Asp Asn Lys Thr Pro Thr Arg Pro Cys Pro Gln Gly Asp
    210                 215                 220

Ala Gly Asp Lys Lys Ala Met Asp Arg Ala Ala Pro Arg Gly Ser Arg
225                 230                 235                 240

Gly Met Glu Cys Phe Ser Arg Pro Asn Pro Ile Pro Gly Pro Arg Ile
                245                 250                 255

Gln Met Pro Pro Pro Arg Gln Ala Pro Gln
            260                 265
```

<210> 33
<211> 264
<212> PRT
<213> Triticum aestivum

<400> 33

```
Met Ala Thr Ala Ser Thr Met Ser Leu Leu Pro Ile Ser His Leu Lys
1               5                   10                  15

Gln Met Gln Gln Gln Arg Arg Thr Arg Leu Ala Gly Ala Leu Pro Gly
            20                  25                  30

Lys Val Leu Val Leu Gly Arg Arg Arg Arg His Val Val Pro Arg Ala
        35                  40                  45

Arg Leu Phe Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu
    50                  55                  60

Phe Val Gly Val Asp Glu Glu Lys His Pro Gly Lys Leu Pro Arg Thr
65                  70                  75                  80
```

```
Tyr Thr Leu Thr His Ser Asp Val Thr Ala Arg Leu Thr Leu Ala Val
                85                  90                  95

Ser His Thr Ile His Ala Ala Gln Leu Gln Gly Trp Tyr Asn Arg Leu
            100                 105                 110

Gln Arg Asp Glu Val Val Ala Glu Trp Lys Lys Val Gln Gly Ala Met
        115                 120                 125

Ser Leu His Val His Cys His Ile Ser Gly Gly His Phe Leu Leu Asp
    130                 135                 140

Leu Ile Ala Pro Leu Arg Tyr Tyr Ile Phe Arg Lys Glu Leu Pro Val
145                 150                 155                 160

Val Leu Lys Ala Phe Val His Gly Asp Gly Ser Leu Phe Ser Gln His
                165                 170                 175

Pro Glu Leu Glu Glu Ala Thr Val Trp Val Tyr Phe His Ser Asn Asn
            180                 185                 190

Pro Asn Phe Asn Arg Val Glu Cys Trp Gly Pro Leu Ala Met Pro Arg
        195                 200                 205

Ala Leu Asp Asp Glu Thr Pro Arg Asp Ser His Arg Arg Arg Thr Val
    210                 215                 220

Pro Leu His Asp Asp Ser Arg Arg Ala Gly Ser Ala Pro Gly Ala Pro
225                 230                 235                 240

Ala Leu Asp Gly Val Pro Gln Asn Ala Ile Pro Gly Ala Asp Pro Ile
                245                 250                 255

Ala Ala Asn Arg Gln Gly Pro Gln
            260
```

<210> 34
<211> 281
<212> PRT
<213> Zea mays

<400> 34

```
Met Ala Ala Ala Ala Ser Thr Met Ser Leu Leu Pro Ile Ser Gln Pro
1               5                   10                  15

Arg Lys Gln Gln Gln Gln Gly Ala Gly Ala Val Val Val Phe Gln Arg
            20                  25                  30
```

```
Arg Pro Trp Asp Ala Arg Arg Arg Arg Tyr Val Val Pro Thr Ala Arg
        35                  40                  45

Leu Phe Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe
    50                  55                  60

Leu Gly Val Asp Glu Gly Ser Ser Lys His Leu His Ala His His Pro
65                  70                  75                  80

Ala Pro Ala Pro Leu Leu Pro Arg Thr Tyr Thr Leu Thr His Ser Asp
                85                  90                  95

Val Thr Ala Ser Leu Thr Leu Ala Val Ser His Thr Ile Asn Arg Ala
            100                 105                 110

Gln Leu Gln Gly Trp Tyr Asn Arg Leu Gln Arg Asp Glu Val Val Ala
        115                 120                 125

Glu Trp Lys Lys Val Arg Gly Arg Met Ser Leu His Val His Cys His
    130                 135                 140

Ile Ser Gly Gly His Leu Leu Leu Asp Leu Ile Ala Gly Leu Arg Tyr
145                 150                 155                 160

Tyr Ile Phe Arg Lys Glu Leu Pro Val Val Leu Glu Ala Phe Val His
                165                 170                 175

Gly Asp Gly Asp Leu Phe Ser Arg His Pro Glu Leu Glu Glu Ala Thr
            180                 185                 190

Val Trp Val Tyr Phe His Ser Asn Leu Ala Arg Phe Asn Arg Val Glu
        195                 200                 205

Cys Trp Gly Pro Leu Arg Asp Ala Ala Ala Pro Ala Pro Ala Glu Asp
    210                 215                 220

Asp Ser Thr Ala Pro Ala Ala Ala Ser Ile Ala Met Glu Gly Gln Met
225                 230                 235                 240

Pro Val Gly Glu Trp Pro His Arg Cys Pro Gln Gln Cys Asp Cys Cys
                245                 250                 255

Phe Pro Pro His Ser Leu Ile Pro Trp Pro Asn Glu Gln Asp Met Ala
            260                 265                 270

Ala Ala Ala Gly Gln Val Arg Gln Gln
        275                 280
```

<210> 35
<211> 274
<212> PRT
<213> Zea mays

<400> 35

```
Met Ala Ala Ala Thr Ala Ala Ala Ser Thr Met Ser Leu Leu Pro Ile
1               5                  10                  15

Ser Gln Leu Arg Gln Gln His Gly Ala Gly Ala Met Arg Arg Arg Pro
            20                  25                  30

Trp Val Ala Arg Arg Arg Arg Tyr Val Val Pro Thr Ala Arg Leu Phe
        35                  40                  45

Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly
    50                  55                  60

Val Asp Asp Glu Ala Gly Ser Lys Gln His Gly Pro Leu Pro Arg Thr
65                  70                  75                  80

Tyr Thr Leu Thr His Ser Asp Val Thr Ala Arg Leu Thr Leu Ala Val
                85                  90                  95

Ser His Thr Ile Asn Arg Ala Gln Leu Gln Gly Trp Tyr Asn Arg Leu
            100                 105                 110

Gln Arg Asp Glu Val Val Ala Glu Trp Lys Lys Val Arg Gly Arg Met
        115                 120                 125

Ser Leu His Val His Cys His Ile Ser Gly Gly His Phe Leu Leu Asp
    130                 135                 140

Leu Ile Ala Gly Leu Arg Tyr Val Ile Phe Arg Lys Glu Leu Pro Val
145                 150                 155                 160

Val Leu Lys Ala Phe Val His Gly Asp Gly Asp Leu Phe Ser Arg His
                165                 170                 175

Pro Glu Leu Glu Glu Ala Thr Val Trp Val Tyr Phe His Ser Asn Leu
            180                 185                 190

Ala Arg Phe Asn Arg Val Glu Cys Trp Gly Pro Leu Arg Asp Ala Ala
        195                 200                 205

Ala Pro Ala Glu Asp Asp Ser Thr Ala Pro Pro Asp Ala Ser Asn Ser
    210                 215                 220
```

```
Lys Glu Ala Gly Gln Met Met Ala Met Cys Glu Trp Pro His Arg Cys
225                 230                 235                 240

Pro Gln Gln Cys Gly Cys Cys Phe Pro Pro His Ser Leu Ile Pro Trp
                245                 250                 255

Pro Asn Glu His Asp Met Ala Ala Ala Asp Ala Ser Gly Ser Ala Gln
            260                 265                 270

Gln Gln
```

<210> 36
<211> 266
<212> PRT
<213> Sorghum bicolor

<400> 36

```
Met Ala Ala Ala Thr Ala Ala Ala Ala Ser Thr Met Ser Leu Pro Pro
1               5                   10                  15

Ile Ser Gln Leu Arg Gln Gln Gln His Gly Ala Gly Ala Val Val Val
            20                  25                  30

Phe Arg Arg Arg Ala Arg Asp Ala Arg Arg Arg Arg Tyr Val Val Pro
        35                  40                  45

Thr Ala Arg Leu Phe Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys
    50                  55                  60

Val Leu Phe Leu Gly Val Asp Glu Glu Ser Asn Asn Lys His Gly His
65                  70                  75                  80

Pro Thr Thr Pro Ser Pro Thr Ser Pro Pro Leu Pro Leu Leu Pro Arg
                85                  90                  95

Thr Tyr Thr Leu Thr His Ser Asp Val Thr Ala Ser Leu Thr Leu Ala
            100                 105                 110

Val Ser His Thr Ile Asn Arg Ala Gln Leu Gln Gly Trp Tyr Asn Arg
        115                 120                 125

Leu Gln Arg Asp Glu Val Val Ala Glu Trp Lys Lys Val Arg Gly Arg
    130                 135                 140

Met Ser Leu His Val Leu Lys Ala Phe Val His Gly Asp Gly Asp Leu
145                 150                 155                 160
```

```
Phe Ser Arg His Pro Glu Leu Glu Asp Ala Pro Val Trp Val Tyr Phe
                165                 170                 175

His Ser Asn Leu Thr Arg Phe Asn Arg Val Glu Cys Trp Gly Pro Leu
            180                 185                 190

Arg Asp Ala Ala Ala Pro Pro Ala Glu Asp Asp Ser Thr Ala Pro Ala
        195                 200                 205

Ala Ala Ser Asn Lys Asp Gly Gln Met Pro Pro Val Gly Glu Trp Pro
    210                 215                 220

Tyr Arg Cys Pro Gln Gln Cys Asp Cys Cys Phe Pro Pro His Ser Leu
225                 230                 235                 240

Ile Pro Trp Pro Asn Glu Arg Asp Met Ala Ala Ala Ala Ala Asp Ala
                245                 250                 255

Ser Ser Ala Ala Gly Gln Ala Gln Gln Gln
            260                 265


<210>  37
<211>  261
<212>  PRT
<213>  Glycine max

<400>  37

Met Cys Thr Leu Thr Thr Val Pro Val Leu Pro Ser Lys Leu Asn Lys
1               5                   10                  15

Pro Ser Leu Ser Pro His His Asn Ser Leu Phe Pro Tyr Cys Gly Arg
            20                  25                  30

Arg Val Gly Lys Lys Asn Lys Ala Met Val Pro Val Ala Arg Leu Phe
        35                  40                  45

Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly
    50                  55                  60

Val Asp Glu Asn Lys His Pro Gly Asn Leu Pro Arg Thr Tyr Thr Leu
65                  70                  75                  80

Thr His Ser Asp Ile Thr Ala Lys Leu Thr Leu Ala Ile Ser Gln Thr
                85                  90                  95

Ile Asn Asn Ser Gln Leu Gln Gly Trp Tyr Asn Arg Phe Gln Arg Asp
            100                 105                 110
```

```
Glu Val Val Ala Gln Trp Lys Lys Val Lys Gly Arg Met Ser Leu His
        115                 120                 125

Val His Cys His Ile Ser Gly Gly His Phe Leu Leu Asp Ile Leu Ala
    130                 135                 140

Arg Leu Arg Tyr Phe Ile Phe Cys Lys Glu Leu Pro Val Val Leu Lys
145                 150                 155                 160

Ala Val Val His Gly Asp Glu Asn Leu Phe Asn Ser Tyr Pro Glu Leu
                165                 170                 175

Gln Asp Ala Leu Val Trp Val Tyr Phe His Ser Asn Ile Pro Glu Phe
            180                 185                 190

Asn Lys Val Glu Cys Trp Gly Pro Leu Lys Glu Ala Ser Ala Pro Thr
        195                 200                 205

Gly Gly Val Gln Glu Glu Gly Leu Ala Ile Pro Gln Pro Cys Gln Glu
    210                 215                 220

Glu Cys Gln Cys Cys Phe Pro Pro Leu Thr Leu Ser Pro Ile Gln Trp
225                 230                 235                 240

Ser Lys Gln Val Pro Ser Arg His Tyr Glu Pro Cys Asp Gly Ile Gly
                245                 250                 255

Thr Gln Gln Asn Leu
            260
```

<210> 38
<211> 271
<212> PRT
<213> Glycine max

<400> 38

```
Met Gly Thr Leu Thr Thr Val Pro Val Leu Pro Ser Lys Leu Asn Lys
1               5                   10                  15

Pro Ser Leu Ser Pro Arg His Asn Ser Leu Phe Pro Tyr Tyr Gly Arg
            20                  25                  30

Arg Val Gly Lys Lys Asn Lys Ala Met Val Pro Val Ala Arg Leu Phe
        35                  40                  45

Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly
    50                  55                  60
```

```
Val Asp Glu Asn Lys His Pro Gly Asn Leu Pro Arg Thr Tyr Thr Leu
65                  70                  75                  80

Thr His Ser Asp Ile Thr Ala Lys Leu Thr Leu Ala Ile Ser Gln Thr
                85                  90                  95

Ile Asn Asn Ser Gln Leu Gln Gly Trp Tyr Asn Arg Leu Gln Arg Asp
            100                 105                 110

Glu Val Val Ala Gln Trp Lys Lys Val Lys Gly Lys Met Ser Leu His
        115                 120                 125

Val His Cys His Ile Ser Gly Gly His Phe Leu Leu Asp Ile Leu Ala
    130                 135                 140

Arg Leu Arg Tyr Phe Ile Phe Cys Arg Glu Leu Pro Val Val Leu Lys
145                 150                 155                 160

Ala Val Val His Gly Asp Glu Asn Leu Phe Asn Asn Tyr Pro Glu Leu
                165                 170                 175

Gln Asp Ala Leu Val Trp Val Tyr Phe His Ser Asn Ile Pro Glu Phe
            180                 185                 190

Asn Lys Val Glu Cys Trp Gly Pro Leu Lys Glu Ala Ser Ala Pro Ile
        195                 200                 205

Gly Gly Ala Lys Glu Glu Ser Glu Gln Glu Thr Leu Leu Ser Lys Glu
    210                 215                 220

Gly Leu Ala Ile Pro Gln Pro Cys Gln Glu Glu Cys Glu Cys Cys Phe
225                 230                 235                 240

Pro Pro Leu Thr Leu Ser Pro Ile Gln Trp Ser Gln Gln Val Pro Ser
                245                 250                 255

His His Tyr Glu Pro Cys Asp Gly Ile Glu Thr Gln Gln Ser Leu
            260                 265                 270


<210>  39
<211>  274
<212>  PRT
<213>  Vitis vinifera

<400>  39

Met Ala Thr Leu Thr Ala Ala Leu Val Leu Pro Ser Glu Leu Lys Pro
1               5                   10                  15
```

```
Ser Phe Ser Gln His Gln Ser Ser Leu Phe Val Cys Arg Arg Arg Pro
            20                  25                  30

Lys Lys Ser Asn Pro Ala Phe Pro Ala Ala Arg Leu Phe Gly Pro Ala
        35                  40                  45

Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly Val Asp Glu
    50                  55                  60

Lys Lys His Pro Gly Lys Leu Pro Arg Thr Tyr Thr Leu Thr His Ser
65                  70                  75                  80

Asp Ile Thr Ser Lys Leu Thr Leu Ala Ile Ser Gln Thr Ile Asn Asn
                85                  90                  95

Ser Gln Leu Gln Gly Trp Ser Asn Arg Leu Gln Arg Asp Glu Val Val
            100                 105                 110

Ala Gln Trp Lys Lys Val Lys Asp Gln Met Ser Leu His Val His Cys
        115                 120                 125

His Ile Ser Gly Gly His Phe Leu Leu Asp Leu Cys Ala Lys Leu Arg
    130                 135                 140

Tyr Phe Ile Phe Cys Lys Glu Leu Pro Val Val Leu Lys Ala Phe Val
145                 150                 155                 160

His Gly Asp Gly Asn Leu Leu Asn Asn Tyr Pro Glu Leu Gln Glu Ala
                165                 170                 175

Leu Val Trp Val Tyr Phe His Ser Asn Leu Pro Glu Phe Asn Arg Val
            180                 185                 190

Glu Cys Trp Gly Ala Leu Asn Asn Ala Ala Ala Pro Pro Pro Pro Ala
        195                 200                 205

Ala Gly Gly Gly Gly Gly Arg Val Glu Ala His Gln Asp Met Arg Gln
    210                 215                 220

Val Glu Pro Ser Ser Lys Trp Glu Arg Pro Glu Glu Pro Cys Met Glu
225                 230                 235                 240

Asn Cys Thr Cys Cys Phe Pro Pro Met Ser Leu Ile Pro Trp Ser Gln
                245                 250                 255

Asp Leu Ala His Glu Asn Ile His Asp Thr Gln Lys Gly Leu Gln Gln
```

260 265 270

Gln Thr

<210> 40
<211> 280
<212> PRT
<213> Lactuca sativa

<400> 40

Met Ala Ser Leu Ile Leu Pro Thr Lys Gln Asn Pro Pro Ser Ser Ser
1 5 10 15

Phe Leu His Gln Asn His Gln Asn Asn Pro Phe Phe Thr Asn Lys Arg
20 25 30

Arg Lys Leu Lys Arg Asn Gln Ala Leu Val Pro Val Ala Arg Leu Phe
35 40 45

Gly Pro Ser Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly
50 55 60

Val Asp Glu Lys Lys His Pro Gly Lys Leu Pro Arg Thr Tyr Thr Leu
65 70 75 80

Thr His Ser Asp Ile Thr Ser Lys Leu Thr Leu Ala Ile Ser Gln Thr
85 90 95

Ile Asn Asn Ser Gln Leu Gln Gly Trp Tyr Asn Gln Leu Tyr Arg Asp
100 105 110

Glu Val Val Ala Glu Trp Arg Lys Val Lys Gly Asn Met Ser Leu His
115 120 125

Val His Cys His Ile Ser Arg Gly His Phe Leu Leu Asp Leu Cys Ala
130 135 140

Arg Leu Arg Phe Phe Ile Phe Thr Lys Glu Leu Pro Leu Val Leu Lys
145 150 155 160

Ala Phe Ala His Gly Asp Gly Asn Leu Leu Asn Ser Tyr Pro Glu Leu
165 170 175

Gln Glu Ala Ser Val Trp Val Tyr Phe His Ser Asn Ile Gln Glu Phe
180 185 190

Asn Arg Val Glu Cys Trp Gly Pro Leu Arg Glu Ala Val Gly Pro Leu

195 200 205

Ser Thr Thr Thr Ser Ser Ser Ser Ser Ser Ser Leu Ser Glu Ser Thr
210 215 220

Ile Ala Glu Ala Gly Glu Gly Ser Asn Asn Trp Glu Ile Pro Lys Pro
225 230 235 240

Cys Leu Glu Ala Cys Ala Cys Cys Phe Pro Pro Met Ser Ser Ile Pro
245 250 255

Trp Ser His Asp Leu Val Lys Asn Gln Asp Asp Asp Asp Gly Ala Thr
260 265 270

His Gln Gly Leu Gln Gln Lys Ala
275 280

<210> 41
<211> 290
<212> PRT
<213> Pinus taeda

<400> 41

Met Ala Val Ala Arg Ile Ser Ala Gly Lys Thr Gln His Cys Tyr Ser
1 5 10 15

Phe Ser Pro Ser Asp Val Arg Ile Ser Ser Ala Pro Gln Asn Ser Gln
20 25 30

Ser Gln Phe Lys Arg Lys Ser Lys Ile Lys Leu Ser Ser Arg Phe Leu
35 40 45

Ala Ser Glu Ser Ser Trp Asn Gly Leu Val Ala His Gln Leu Gln Cys
50 55 60

Asn Asn Arg His Arg Thr Asn Ser Ser Phe Pro Arg Ser Thr Ser Arg
65 70 75 80

Val Val Ala Arg Leu Phe Gly Pro Ala Ile Phe Gln Ala Ser Lys Leu
85 90 95

Lys Val Leu Phe Leu Gly Thr His Glu Glu Lys His Pro Ala His Leu
100 105 110

Pro Arg Thr Tyr Thr Leu Thr His Ser Asp Ile Thr Ala Lys Leu Thr
115 120 125

Leu Ala Phe Ser Gln Thr Ile Asn Lys Asp Gln Gly Trp Tyr Asn Arg

130 135 140

Leu Gln Arg Asp Glu Val Leu Ala Gln Trp Lys Lys Ser Gln Gly Lys
145 150 155 160

Met Ser Leu His Val His Cys His Ile Ser Gly Gly His Trp Leu Leu
165 170 175

Asp Ala Ile Ala Arg Leu Arg Phe Tyr Ile Phe Arg Lys Glu Leu Pro
180 185 190

Val Val Leu Glu Ala Phe Arg His Gly Asp Arg Ala Leu Leu Glu Lys
195 200 205

His Pro Glu Leu Glu Thr Ala Leu Val Trp Val Tyr Phe His Ser Asn
210 215 220

Val Lys Glu Phe Lys Arg Val Glu Cys Trp Gly Ser Leu Ala Glu Ala
225 230 235 240

Cys Lys Gly Ala Pro Ser Asn Leu Asn Lys Glu Leu Asp Glu Leu Asp
245 250 255

Gly Gly Lys Leu Glu Met Pro Ser His Cys Ala Glu Pro Cys Ser Cys
260 265 270

Cys Phe Pro Pro Phe Ser Val Leu Leu Arg Pro Glu Asp Val Glu Gln
275 280 285

Phe Ser
290

<210> 42
<211> 271
<212> PRT
<213> Citrus sinensis

<400> 42

Met Ala Ser Leu Val Ala Ala Leu Gly Leu Pro Ser Lys Leu Lys Ala
1 5 10 15

Ser Pro Tyr Glu Gln Gln Asn Ala Leu Phe Val Ser Arg Arg Arg Ser
20 25 30

Lys Lys Lys Asn Gln Ser Phe Ala Pro Val Ala Arg Leu Phe Gly Pro
35 40 45

Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly Val Asp

50 55 60

Glu Glu Lys His Pro Gly Lys Leu Pro Arg Thr Tyr Thr Leu Thr His
65 70 75 80

Ser Asp Ile Thr Ser Lys Leu Thr Leu Ala Ile Ser Gln Thr Ile Asn
85 90 95

Asn Ser Gln Leu Gln Gly Trp Tyr Asn Arg Leu Gln Arg Asp Glu Val
100 105 110

Val Ala Glu Trp Lys Lys Val Lys Gly Lys Met Ser Leu His Val His
115 120 125

Cys His Ile Ser Gly Gly His Phe Leu Leu Asp Ile Cys Ala Arg Leu
130 135 140

Arg Phe Phe Ile Phe Ser Lys Glu Leu Pro Val Val Leu Lys Ala Phe
145 150 155 160

Val His Gly Asp Gly Asn Leu Leu Asn Asn His Pro Glu Leu Gln Glu
165 170 175

Ala Leu Val Trp Val Tyr Phe His Ser Asn Ile Pro Glu Phe Asn Lys
180 185 190

Val Glu Cys Trp Gly Pro Leu Lys Glu Ala Val Ala Gly Ser Ser Glu
195 200 205

Ala Gly Gly Thr Arg His Glu Ile Arg Gln Glu Thr Ser Ile Ser Asn
210 215 220

Trp Glu Leu Pro Glu Pro Cys Gln Glu Thr Cys Asn Cys Cys Phe Pro
225 230 235 240

Pro Met Ser Leu Ile Pro Trp Ser Glu Lys Leu Pro Leu Gln Thr Glu
245 250 255

Asn Arg Gly Thr Gln Gly Gln Glu Ser Leu Gln Gln Gln Thr Arg
260 265 270

<210> 43
<211> 263
<212> PRT
<213> Medicago truncatula

<400> 43

Met Gly Thr Leu Thr Thr Ala Pro Pro Pro Met Leu Thr Ser Lys Phe

```
1               5                   10                  15

Lys Pro Ser Phe Ser Pro Gln His Lys Pro Leu Phe Pro Asn Arg Arg
            20                  25                  30

Arg Leu Trp Lys Lys Asn Gln Ser Ile Val Pro Val Ala Arg Leu Phe
        35                  40                  45

Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly
    50                  55                  60

Ile Asp Glu Asp Lys His Pro Gly Asn Leu Pro Arg Thr Tyr Thr Leu
65                  70                  75                  80

Thr His Ser Asp Val Thr Ser Lys Leu Thr Leu Ala Ile Ser Gln Thr
                85                  90                  95

Ile Asn Asn Ser Gln Leu Gln Gly Trp Tyr Asn Arg Leu Gln Arg Asp
            100                 105                 110

Glu Val Val Ala Gln Trp Lys Lys Val Lys Gly Lys Met Ser Leu His
        115                 120                 125

Val His Cys His Ile Ser Gly Gly His Phe Leu Leu Asp Ile Phe Ala
    130                 135                 140

Arg Leu Arg Tyr Phe Ile Phe Cys Lys Glu Leu Pro Val Val Leu Lys
145                 150                 155                 160

Ala Phe Val His Gly Asp Gly Asn Leu Phe Asn Asn Tyr Pro Glu Leu
                165                 170                 175

Gln Glu Ala Leu Val Trp Val Tyr Phe His Ser Lys Ile Pro Glu Phe
            180                 185                 190

Asn Lys Val Glu Cys Trp Gly Pro Leu Lys Glu Ala Ser Gln Pro Thr
        195                 200                 205

Ser Gly Thr Gln Arg Asp His Gln Asn Leu Thr Leu Pro Glu Pro Cys
    210                 215                 220

Gln Glu Thr Cys Glu Cys Cys Phe Pro Pro Leu Lys Leu Ser Pro Met
225                 230                 235                 240

Pro Cys Ser Asn Glu Val His Asn Asp Thr Tyr Glu Pro Ile Asp Gly
                245                 250                 255
```

Ile Glu Thr Gln Gln Ser Leu
260

<210> 44
<211> 272
<212> PRT
<213> Solanum tuberosum

<400> 44

Met Gly Thr Leu Thr Ala Ser Leu Val Val Pro Ser Lys Leu Asn Asn
1 5 10 15

Glu Lys Gln Ser Ser Ile Phe Val His Lys Thr Arg Arg Lys Ser Lys
20 25 30

Lys Asn Gln Ser Ile Val Pro Val Ala Arg Leu Phe Gly Pro Ala Ile
35 40 45

Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly Val Asp Glu Glu
50 55 60

Lys His Pro Gly Lys Leu Pro Arg Thr Tyr Thr Leu Thr His Ser Asp
65 70 75 80

Ile Thr Ser Lys Leu Thr Leu Ala Ile Ser Gln Thr Ile Asn Asn Ser
85 90 95

Gln Leu Gln Gly Trp Tyr Asn Arg Leu Gln Arg Asp Glu Val Val Ala
100 105 110

Glu Trp Lys Lys Val Lys Gly Lys Met Ser Leu His Val His Cys His
115 120 125

Ile Ser Gly Gly His Phe Met Leu Asp Leu Phe Ala Arg Leu Arg Asn
130 135 140

Tyr Ile Phe Cys Lys Glu Leu Pro Val Val Leu Lys Ala Phe Val His
145 150 155 160

Gly Asp Glu Asn Leu Leu Lys Asn Asn Pro Glu Leu Gln Glu Ala Leu
165 170 175

Val Trp Val Tyr Phe His Ser Asn Ile Gln Glu Phe Asn Lys Val Glu
180 185 190

Cys Trp Gly Pro Leu Lys Asp Ala Thr Ser Pro Ser Ser Ser Ser Ser
195 200 205

```
Gly Val Gly Gly Val Lys Ser Thr Ser Phe Thr Ser Asn Ser Asn Asn
    210                 215                 220

Lys Trp Glu Leu Pro Lys Pro Cys Glu Glu Ala Cys Ala Cys Cys Phe
225                 230                 235                 240

Pro Pro Met Ser Val Met Pro Trp Pro Ser Ser Asn Leu Asp Gly Ile
                245                 250                 255

Gly Glu Glu Asn Gly Thr Ile Gln Gln Gly Leu Gln Glu Gln Gln Ser
            260                 265                 270
```

<210> 45
<211> 269
<212> PRT
<213> Populus tremula x Populus tremuloides

<400> 45

```
Met Gly Ser Leu Ala Ile Ala Pro Phe Leu Pro Ser Lys Leu Arg Pro
1               5                   10                  15

Ser Ile Leu Asp Gln Asn Ser Ser Leu Phe Pro Ser Lys Lys Lys Leu
            20                  25                  30

Lys Arg Lys Asn Gln Ser Ile Ser Pro Val Ala Arg Leu Phe Gly Pro
        35                  40                  45

Ser Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly Val Asp
    50                  55                  60

Glu Lys Lys His Pro Gly Asn Leu Pro Arg Thr Tyr Thr Leu Thr His
65                  70                  75                  80

Ser Asp Ile Thr Ala Lys Leu Thr Leu Ala Ile Ser Gln Thr Ile Asn
                85                  90                  95

Asn Ser Gln Leu Gln Gly Trp Ser Asn Lys Leu Tyr Arg Asp Glu Val
            100                 105                 110

Val Ala Glu Trp Lys Lys Val Lys Gly Lys Met Ser Leu His Val His
        115                 120                 125

Cys His Ile Ser Gly Gly His Phe Leu Leu Asp Leu Cys Cys Arg Leu
    130                 135                 140

Arg Tyr Phe Ile Phe Arg Lys Glu Leu Pro Val Val Leu Lys Ala Phe
145                 150                 155                 160
```

```
Phe His Gly Asp Gly Asn Leu Phe Ser Ser Tyr Pro Glu Leu Gln Glu
                165                 170                 175

Ala Leu Val Trp Val Tyr Phe His Ser Asn Ile Pro Glu Phe Asn Lys
            180                 185                 190

Val Glu Cys Trp Gly Pro Leu Lys His Ala Ala Ala Pro Tyr Thr Ala
        195                 200                 205

Ala Ser Gly Gly Ala Pro Glu Asn Lys Glu Gln Ala Thr Asp Trp Asn
    210                 215                 220

Leu Pro Glu Pro Cys Gln Glu Asn Cys Gln Cys Cys Phe Pro Pro Met
225                 230                 235                 240

Ser Leu Ile Pro Trp Ser Glu Met Val Pro Gln Glu Asn Lys Asn Asn
                245                 250                 255

Pro Ser Thr Gln Gln Thr Phe Gln Gln Ala Gln Gln Pro
            260                 265
```

<210> 46
<211> 270
<212> PRT
<213> Populus tremula x Populus tremuloides

<400> 46

```
Met Gly Ser Leu Ala Val Ala Pro Phe Leu Pro Ser Lys Pro Arg Pro
1               5                   10                  15

Ser Leu Phe Asp Gln His Ser Ser Leu Phe Ser Pro Ser Thr Lys Leu
            20                  25                  30

Lys Arg Lys Asn Gln Ser Ile Ser Pro Val Ala Arg Leu Phe Gly Pro
        35                  40                  45

Ser Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly Val Asp
    50                  55                  60

Glu Lys Glu His Pro Gly Asn Leu Pro Arg Thr Tyr Thr Leu Thr His
65                  70                  75                  80

Ser Asp Met Thr Ala Lys Leu Thr Leu Ala Ile Ser Gln Thr Ile Asn
                85                  90                  95

Asn Ser Gln Leu Gln Gly Trp Ser Asn Lys Leu Tyr Arg Asp Glu Val
            100                 105                 110
```

```
Val Ala Glu Trp Lys Lys Val Lys Gly Lys Met Ser Leu His Val His
        115                 120                 125

Cys His Ile Ser Gly Gly His Phe Leu Leu Asp Trp Cys Cys Arg Leu
    130                 135                 140

Arg Tyr Phe Ile Phe Arg Arg Glu Leu Pro Val Val Leu Lys Ala Phe
145                 150                 155                 160

Phe His Gly Asp Gly Ser Leu Leu Ser Asn Tyr Pro Glu Leu Gln Glu
                165                 170                 175

Gly Leu Val Trp Val Tyr Phe His Ser Asn Ile Pro Glu Phe Ser Lys
            180                 185                 190

Val Glu Cys Trp Gly Pro Leu Lys Asp Ala Ala Ala Pro Ser Thr Ser
        195                 200                 205

Glu Thr Gly Gly Ser Asn Glu Thr Glu Glu Leu Ala Asn Gln Ser Ser
    210                 215                 220

Asn Trp Asp Leu Pro Glu Pro Cys Gln Glu Glu Asn Cys Ser Cys Cys
225                 230                 235                 240

Phe Pro Pro Met Ser Leu Ile Pro Trp Ser Lys Met Val Pro Leu Glu
                245                 250                 255

Asp Lys Asn Asn Pro Ser Thr Pro Gln Asn Leu Gln Gln Pro
            260                 265                 270
```

<210> 47
<211> 286
<212> PRT
<213> Mesembryanthemum crystallinum

<400> 47

```
Met Gly Thr Leu Thr Ala Ser Met Leu Leu Pro Ser Lys Leu Lys Pro
1               5                   10                  15

Ser Val Phe Glu Asp Gln Ser Ser Val Tyr Phe Lys Arg Ser Cys Arg
            20                  25                  30

Gly Leu Pro Lys Leu Asn Lys Ala Lys Ser Phe Ser Pro Val Met Arg
        35                  40                  45

Leu Phe Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe
    50                  55                  60
```

```
Leu Gly Val Asp Lys Glu Lys His Pro Gly Lys Leu Pro Arg Thr Tyr
65                  70                  75                  80

Thr Leu Thr His Ser Asp Ile Thr Ser Lys Leu Thr Leu Ala Ile Ser
                85                  90                  95

Gln Thr Ile Asn Asn Ser Gln Leu Gln Gly Trp Tyr Asn Gln Leu Gln
            100                 105                 110

Arg Asp Glu Val Val Ala Glu Trp Lys Lys Val Lys Gly Lys Met Ser
        115                 120                 125

Leu His Val His Cys His Ile Ser Gly Gly His Ile Leu Leu Asp Leu
    130                 135                 140

Phe Ala Lys Leu Arg Phe Tyr Ile Phe Cys Lys Glu Leu Pro Val Val
145                 150                 155                 160

Leu Lys Ala Phe Val His Gly Asp Glu Asn Leu Phe Asn Asn Tyr Pro
                165                 170                 175

Glu Leu Gln Glu Ala Met Val Trp Val Tyr Phe His Ser Asn Leu Glu
            180                 185                 190

Glu Phe Asn Lys Ile Glu Cys Trp Gly Pro Leu Lys Asp Ala Val Ala
        195                 200                 205

Arg Asn Ser Lys Lys Asn Lys Asn Lys Asn Lys Ile Asp Phe Lys Leu
    210                 215                 220

Ser Phe Lys Glu Glu Asp Asp Ser Pro Asp Asn Glu Leu Glu Ile Pro
225                 230                 235                 240

Glu Thr Cys Lys Glu Pro Cys Thr Cys Cys Phe Pro Pro Thr Ser Val
                245                 250                 255

Ile Pro Trp Ser His Ser Ala Leu Ser Gln Gly Asp Asp Leu His Leu
            260                 265                 270

Ser Gly Gly Thr His Gln Gly Leu Glu Gln Gln Gln Gln Thr
        275                 280                 285
```

<210> 48
<211> 268
<212> PRT
<213> Arabidopsis thaliana

<400> 48

```
Met Cys Ser Leu Ser Ala Ile Met Leu Leu Pro Thr Lys Leu Lys Pro
1               5                  10                  15

Ala Tyr Ser Asp Lys Arg Ser Asn Ser Ser Ser Ser Ser Ser Leu Phe
            20                  25                  30

Phe Asn Asn Arg Arg Ser Lys Lys Lys Asn Gln Ser Ile Val Pro Val
        35                  40                  45

Ala Arg Leu Phe Gly Pro Ala Ile Phe Glu Ser Ser Lys Leu Lys Val
    50                  55                  60

Leu Phe Leu Gly Val Asp Glu Lys Lys His Pro Ser Thr Leu Pro Arg
65                  70                  75                  80

Thr Tyr Thr Leu Thr His Ser Asp Ile Thr Ala Lys Leu Thr Leu Ala
                85                  90                  95

Ile Ser Gln Ser Ile Asn Asn Ser Gln Leu Gln Gly Trp Ala Asn Arg
            100                 105                 110

Leu Tyr Arg Asp Glu Val Val Ala Glu Trp Lys Lys Val Lys Gly Lys
        115                 120                 125

Met Ser Leu His Val His Cys His Ile Ser Gly Gly His Phe Leu Leu
    130                 135                 140

Asp Leu Phe Ala Lys Phe Arg Tyr Phe Ile Phe Cys Lys Glu Leu Pro
145                 150                 155                 160

Val Val Leu Lys Ala Phe Val His Gly Asp Gly Asn Leu Leu Asn Asn
                165                 170                 175

Tyr Pro Glu Leu Gln Glu Ala Leu Val Trp Val Tyr Phe His Ser Asn
            180                 185                 190

Val Asn Glu Phe Asn Lys Val Glu Cys Trp Gly Pro Leu Trp Glu Ala
        195                 200                 205

Val Ser Pro Asp Gly His Lys Thr Glu Thr Leu Pro Glu Ala Arg Cys
    210                 215                 220

Ala Asp Glu Cys Ser Cys Cys Phe Pro Thr Val Ser Ser Ile Pro Trp
225                 230                 235                 240

Ser His Ser Leu Ser Asn Glu Gly Val Asn Gly Tyr Ser Gly Thr Gln
                245                 250                 255
```

Thr Glu Gly Ile Ala Thr Pro Asn Pro Glu Lys Leu
260 265

<210> 49
<211> 271
<212> PRT
<213> Arabidopsis thaliana

<400> 49

Met Cys Ser Leu Ala Thr Asn Leu Leu Leu Pro Ser Lys Met Lys Pro
1 5 10 15

Val Phe Pro Glu Lys Leu Ser Thr Ser Ser Leu Cys Val Thr Thr Arg
20 25 30

Arg Ser Lys Met Lys Asn Arg Ser Ile Val Pro Val Ala Arg Leu Phe
35 40 45

Gly Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly
50 55 60

Val Asp Glu Lys Lys His Pro Ala Lys Leu Pro Arg Thr Tyr Thr Leu
65 70 75 80

Thr His Ser Asp Ile Thr Ala Lys Leu Thr Leu Ala Ile Ser Gln Ser
85 90 95

Ile Asn Asn Ser Gln Leu Gln Gly Trp Ala Asn Lys Leu Phe Arg Asp
100 105 110

Glu Val Val Gly Glu Trp Lys Lys Val Lys Gly Lys Met Ser Leu His
115 120 125

Val His Cys His Ile Ser Gly Gly His Phe Phe Leu Asn Leu Ile Ala
130 135 140

Lys Leu Arg Tyr Tyr Ile Phe Cys Lys Glu Leu Pro Val Val Leu Glu
145 150 155 160

Ala Phe Ala His Gly Asp Glu Tyr Leu Leu Asn Asn His Pro Glu Leu
165 170 175

Gln Glu Ser Pro Val Trp Val Tyr Phe His Ser Asn Ile Pro Glu Tyr
180 185 190

Asn Lys Val Glu Cys Trp Gly Pro Leu Trp Glu Ala Met Ser Gln His
195 200 205

```
Gln His Asp Gly Arg Thr His Lys Lys Ser Glu Thr Leu Pro Glu Leu
    210                 215                 220

Pro Cys Pro Asp Glu Cys Lys Cys Cys Phe Pro Thr Val Ser Thr Ile
225                 230                 235                 240

Pro Trp Ser His Arg His Tyr Gln His Thr Ala Ala Asp Glu Asn Val
                245                 250                 255

Ala Asp Gly Leu Leu Glu Ile Pro Asn Pro Gly Lys Ser Lys Gly
            260                 265                 270
```

<210> 50
<211> 221
<212> PRT
<213> Lycopersicon esculentum

<400> 50

```
Met Gly Thr Leu Thr Thr Ser Leu Val Val Pro Ser Lys Leu Asn Asn
1               5                   10                  15

Glu Gln Gln Ser Ser Ile Phe Ile His Lys Thr Arg Arg Lys Cys Lys
            20                  25                  30

Lys Asn Gln Ser Ile Val Pro Val Ala Arg Leu Phe Gly Pro Ala Ile
        35                  40                  45

Phe Glu Ala Ser Lys Leu Lys Val Leu Phe Leu Gly Val Asp Glu Glu
    50                  55                  60

Lys His Pro Gly Lys Leu Pro Arg Thr Tyr Thr Leu Thr His Ser Asp
65                  70                  75                  80

Ile Thr Ser Lys Leu Thr Leu Ala Ile Ser Gln Thr Ile Asn Asn Ser
                85                  90                  95

Gln Leu Gln Gly Trp Tyr Asn Arg Leu Gln Arg Asp Glu Val Val Ala
            100                 105                 110

Glu Trp Lys Lys Val Lys Gly Lys Met Ser Leu His Val His Cys His
        115                 120                 125

Ile Ser Gly Gly His Phe Met Leu Asp Leu Phe Ala Arg Leu Arg Asn
    130                 135                 140

Tyr Ile Phe Cys Lys Glu Leu Pro Val Val Leu Lys Ala Phe Val His
145                 150                 155                 160
```

```
Gly Asp Glu Asn Leu Leu Arg Asn Tyr Pro Glu Leu Gln Glu Ala Leu
                165                 170                 175

Val Trp Val Tyr Phe His Ser Asn Ile Gln Glu Phe Asn Lys Val Glu
            180                 185                 190

Cys Trp Gly Pro Leu Arg Asp Ala Thr Ser Pro Ser Ser Ser Ser Gly
        195                 200                 205

Gly Val Gly Gly Val Lys Ser Thr Ser Phe Thr Ser His
    210                 215                 220
```

<210> 51
<211> 110
<212> PRT
<213> Beta vulgaris

<400> 51

```
Pro Glu Leu Gln Glu Ala Ser Val Trp Val Tyr Phe His Ser Ser Ile
1               5                   10                  15

Pro Glu Phe Asn Lys Val Glu Cys Trp Gly Pro Leu Thr Asp Ala Val
            20                  25                  30

Asp Pro Pro Ser Lys Asn Lys Lys Arg Met Met Met Ile Asn Asp Glu
        35                  40                  45

Gln Asp Lys Glu Glu Glu Glu Glu Ala Ser Ser Ser Lys Trp Glu Met
    50                  55                  60

Leu Val Pro Cys Thr Lys Pro Cys Arg Cys Cys Phe Pro Pro Thr Ser
65                  70                  75                  80

Leu Ile Pro Trp Thr Pro Ser Leu Ser Gln Glu Gln Gln Gln Glu Gln
                85                  90                  95

Gln Leu Pro Gly Asp Val Ser Ile Pro Pro Pro Gly Thr Arg
            100                 105                 110
```

<210> 52
<211> 187
<212> PRT
<213> Zosterops japonica

<400> 52

```
Thr Tyr Thr Leu Thr His Ser Asp Val Thr Ala Lys Leu Thr Leu Ala
1               5                   10                  15
```

```
Val Ser His Thr Ile His Ala Ala Gln Leu Gln Gly Trp Tyr Asn Arg
            20                  25                  30

Leu Gln Arg Asp Glu Val Val Ala Glu Trp Arg Lys Val Arg Gly Asn
        35                  40                  45

Met Ser Leu His Val His Cys His Ile Ser Gly Gly His Phe Leu Arg
    50                  55                  60

Asp Leu Ile Ala Pro Leu Arg Tyr Tyr Ile Phe Arg Lys Glu Leu Pro
65                  70                  75                  80

Val Val Leu Lys Ala Phe Val His Gly Asp Gly Ser Leu Phe Ser Ser
                85                  90                  95

His Pro Glu Leu Glu Glu Ala Thr Val Trp Val Tyr Phe His Ser Asn
            100                 105                 110

Leu Pro Arg Phe Asn Arg Val Glu Cys Trp Gly Pro Leu Cys Asp Ala
        115                 120                 125

Ala Ala Pro Val Glu Glu Glu Gly Gln Gln Asn Asp Asp Arg Leu Pro
    130                 135                 140

Ala Gly Glu Trp Pro Arg Arg Cys Pro Gln Gln Cys Glu Cys Cys Phe
145                 150                 155                 160

Pro Pro His Ser Leu Ile Pro Trp Pro Asn Glu His Asp Met Ala Pro
                165                 170                 175

Thr Asp Ala Pro Ala Ala Gly Gln Thr Gln Gln
            180                 185


<210>  53
<211>  93
<212>  PRT
<213>  Lotus corniculatus

<400>  53

Tyr Pro Glu Leu Gln Asp Ala Leu Val Trp Val Tyr Phe His Ser Lys
1               5                   10                  15

Ile Pro Glu Phe Asn Lys Val Gln Cys Trp Gly Pro Leu Lys Glu Ala
            20                  25                  30

Ala Ala Pro Ser Gly Gly Ser Pro Glu Lys Glu Gly Glu Gly Val Lys
        35                  40                  45
```

Met Pro Asp Pro Cys Pro Glu Glu Cys Glu Cys Cys Phe Pro Pro Pro
50 55 60

Pro Ala Leu Asp Pro Ile Pro Trp Ser Glu Glu Val Pro Ser Pro His
65 70 75 80

Tyr Glu Ala Phe Asp Gly Val Gly Thr Arg Pro Asn Leu
85 90

<210> 54
<211> 107
<212> PRT
<213> Lotus corniculatus

<400> 54

Asp Leu Cys Ala Lys Leu Arg Tyr Phe Ile Phe Cys Lys Glu Leu Pro
1 5 10 15

Val Val Leu Lys Ala Phe Ile His Gly Asp Glu Asn Leu Phe Asn Asn
20 25 30

Tyr Pro Glu Leu Glu Glu Ser Leu Val Trp Val Tyr Phe His Ser Asn
35 40 45

Ile Ser Glu Phe Asn Lys Val Glu Cys Trp Gly Pro Leu Lys Asp Ala
50 55 60

Cys Ala Thr Ser Ile Gly Ser Tyr Ser Tyr Asp Lys Gly Met Pro Gln
65 70 75 80

Thr Gln Pro Cys Gln Gln Asn Cys Glu Cys Cys Phe Thr Pro Met Ser
85 90 95

Ser Ser Asp Trp Ile Gly Thr Gln Gln Lys Leu
100 105

<210> 55
<211> 137
<212> PRT
<213> Saccharum officinarum

<400> 55

Thr Arg Leu Asp Leu Ile Ala Gly Leu Arg Tyr Tyr Ile Phe Arg Lys
1 5 10 15

Glu Leu Pro Val Val Leu Lys Ala Phe Val His Gly Asp Gly Asp Leu
20 25 30

Phe Ser Arg His Pro Glu Leu Glu Asp Ala Thr Val Trp Val Tyr Phe

35 40 45

His Ser Asn Leu Thr Arg Phe Asn Arg Val Glu Cys Trp Gly Pro Leu
50 55 60

Arg Asp Ala Ala Ala Pro Pro Ala Glu Glu Asp Ser Thr Ala Pro Ala
65 70 75 80

Ala Ser Asn Ser Lys Glu Gly Gln Met Pro Pro Val Gly Glu Trp Pro
85 90 95

Tyr Arg Cys Pro Gln Gln Cys Asp Cys Cys Phe Pro Pro His Ser Leu
100 105 110

Ile Pro Trp Pro Asn Glu His Asp Met Ala Ala Ala Ala Ala Asp Ala
115 120 125

Thr Ala Ala Gly Gln Ala Gln Gln Gln
130 135

<210> 56
<211> 159
<212> PRT
<213> Picea abies

<400> 56

Ile Asn Lys Asp Gln Leu Gln Gly Trp Tyr Asn Arg Leu Gln Arg Asp
1 5 10 15

Glu Val Ile Ala Gln Trp Lys Lys Ser Gln Gly Lys Met Ser Leu His
20 25 30

Val His Cys His Ile Ser Gly Gly His Trp Leu Leu Asp Ala Ile Ala
35 40 45

Arg Leu Arg Phe Tyr Ile Phe Arg Lys Glu Leu Pro Val Val Leu Glu
50 55 60

Ala Phe Arg His Gly Asp Arg Ala Leu Leu Asp Lys His Pro Glu Leu
65 70 75 80

Glu Thr Ala Leu Val Trp Val Tyr Phe His Ser Asn Val Arg Glu Phe
85 90 95

Lys Arg Val Glu Cys Trp Gly Ser Leu Ala Glu Ala Cys Lys Gly Ala
100 105 110

Pro Ser Asn Leu Glu Lys Glu Leu Asp Glu Glu Phe Asn Gly Glu Lys

115 120 125

Leu Glu Met Pro Ser His Cys Ser Glu Pro Cys Asn Cys Cys Phe Pro
130 135 140

Pro Phe Ser Val Leu Leu Arg Pro Glu Asp Ala Glu Gln Phe Ile
145 150 155

<210> 57
<211> 210
<212> PRT
<213> Brassica napus

<400> 57

Met Cys Ser Leu Ala Thr Asn Leu Leu Leu Pro Ser Thr Met Lys Pro
1 5 10 15

Ala Phe Thr Glu Lys Gln Asn Thr Asn Ser Leu Phe Leu Thr Asn Lys
20 25 30

Arg Ser Leu Met Gln Asn Arg Ser Thr Val Pro Val Pro Val Ala Arg
35 40 45

Leu Leu Glu Pro Ala Ile Phe Glu Ala Ser Lys Leu Lys Val Ser Phe
50 55 60

Leu Gly Val Asp Glu Lys Lys His Pro Ser Lys Leu Pro Arg Thr Tyr
65 70 75 80

Thr Leu Thr His Ser Asp Ile Thr Ala Lys Leu Thr Leu Ala Ile Ser
85 90 95

Gln Ser Ile Asn Asn Ser Gln Leu Gln Gly Trp Ala Asn Arg Leu Phe
100 105 110

Arg Asp Glu Val Val Ala Glu Trp Lys Lys Val Lys Gly Lys Met Ser
115 120 125

Leu His Val His Cys His Ile Ser Gly Gly His Phe Leu Leu Asp Leu
130 135 140

Ile Ala Lys Leu Arg Tyr Tyr Ile Phe Cys Lys Glu Leu Pro Val Val
145 150 155 160

Leu Lys Ala Phe Val His Gly Asp Gly Asn Leu Leu Asn Ser Tyr Pro
165 170 175

Glu Leu Gln Glu Ser Pro Val Trp Val Tyr Ser Ile Gln Thr Ser Pro

180 185 190

Ser Thr Ile Arg Leu Asn Val Gly Gly Arg Phe Gly Arg Pro Arg Ser
195 200 205

Thr Asn
210

<210> 58
<211> 97
<212> PRT
<213> Brassica napus

<400> 58

Met Cys Ser Leu Ser Ala Asn Met Leu Leu Pro Thr Lys Leu Lys Pro
1 5 10 15

Ala Tyr Ser Asp Lys Arg Gly Asn Ser Thr Asn Ser Leu Leu Val Ser
20 25 30

Asn Thr Arg Ser Lys Arg Lys Asn Gln Ser Val Val Pro Met Ala Arg
35 40 45

Leu Phe Gly Pro Ala Ile Phe Glu Ser Ser Lys Leu Lys Val Leu Phe
50 55 60

Leu Gly Val Asp Asp Lys Lys His Pro Pro Thr Leu Pro Arg Thr Tyr
65 70 75 80

Thr Leu Thr His Ser Asp Ile Thr Ala Lys Leu Thr Leu Ala Ile Ser
85 90 95

His